

Title (en)

A METHOD FOR STARTING OPERATION OF AN INTERNAL COMBUSTION ENGINE

Title (de)

VERFAHREN ZUM STARTEN DES BETRIEBS EINER BRENNKRAFTMASCHINE

Title (fr)

PROCÉDÉ DE DÉMARRAGE DU FONCTIONNEMENT D'UN MOTEUR À COMBUSTION INTERNE

Publication

**EP 3980640 A1 20220413 (EN)**

Application

**EP 19729511 A 20190605**

Priority

EP 2019064726 W 20190605

Abstract (en)

[origin: WO2020244757A1] The invention relates to a method for starting operation of an internal combustion engine (1), wherein the method comprises the steps of: when the internal combustion engine (1) is not operating, providing pressurized gas in the air intake duct (3); opening the intake valve (25) in a first cylinder (2a) while keeping the exhaust valve (24) of the first cylinder (2a) closed so as to allow the pressurized gas to enter the first cylinder (2a), press onto the corresponding piston (21) and thereby move the corresponding piston (21) and rotate the crank shaft (23); supplying fuel to at least one of the cylinders (2a, 2b) where the corresponding piston has performed or is performing a compression step so as to ignite the fuel and start operation of the engine (1). In the method the pressurized gas is provided by: closing the air intake duct (3) upstream the EGR conduit (5) and closing the exhaust duct (4) downstream the EGR conduit (5) so as to form a closed recirculation loop comprising the EGR conduit (5) for gas contained in the closed recirculation loop; and operating a controllable gas feeding device (9) arranged in the closed recirculation loop while keeping the intake valve(s) (25) closed, wherein the gas feeding device (9) is configured to feed gas from an inlet (9a) to an outlet (9b) thereof and wherein the gas feeding device (9) is operated so that a pressure of the gas contained in the closed recirculation loop is increased in the air intake duct (3) and decreased in the exhaust duct (4).

IPC 8 full level

**F02M 26/34** (2016.01); **F02N 9/04** (2006.01)

CPC (source: EP US)

**F02B 37/00** (2013.01 - EP); **F02M 26/05** (2016.02 - EP US); **F02M 26/34** (2016.02 - EP US); **F02N 9/04** (2013.01 - EP US); **F02N 99/006** (2013.01 - EP US); **Y02T 10/12** (2013.01 - EP); **Y02T 10/40** (2013.01 - EP)

Citation (search report)

See references of WO 2020244757A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)

BA ME

DOCDB simple family (publication)

**WO 2020244757 A1 20201210**; CN 113924414 A 20220111; EP 3980640 A1 20220413; EP 3980640 B1 20230726; EP 3980640 C0 20230726; US 11608807 B2 20230321; US 2022228546 A1 20220721

DOCDB simple family (application)

**EP 2019064726 W 20190605**; CN 201980097026 A 20190605; EP 19729511 A 20190605; US 201917616618 A 20190605